



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/034,380 | 01/03/2002 | Eung Tae Kim | K-0387 | 8668 |

34610 7590 11/30/2004

FLESHNER & KIM, LLP
P.O. BOX 221200
CHANTILLY, VA 20153

EXAMINER

AN, SHAWN S

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2613

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,380

Applicant(s)

KIM, EUNG TAE

Examiner

Shawn S An

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 23-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Restriction/Election

1. Applicant's election with traverse of species I, corresponding to Figures 2-3, which reads on claims 1-22 as filed on 9/7/04 has been acknowledged. The traversal is on the ground(s) that the subject matter of all claims 1-29 is sufficiently related that a thorough search for the subject matter of any one group of claims would encompass a search for the subject matter of the remaining claims, and that the search and examination could be made without serious burden, and lastly MPEP 803

The Examiner agrees with the fact that all of the claims corresponding to the two species are sufficiently related. However, the examination of all of the claims does indeed create undue burden on the Office by virtue of the two distinct (independent) species, which follows:

Species I: Figs. 2 and 3 (a transcoder according to a first embodiment of the invention);

Species II: Fig. 8 (a transcoder according to a second embodiment of the invention).

The prior art searching and a prosecution clearly would be a burden based on the two distinct species. The burden is met by two distinct species (embodiments) and the distinct (independent) is met by the diverse elements between the drawings, wherein one embodiment is not deemed obvious over any other species identified.

Therefore, a reasonable search for one species does not necessarily cover other species corresponding to other figures.

The requirement is still deemed proper and is therefore made FINAL according to the rules and guidelines of MPEP.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eyuboglu et al (5,541,852) in view of Wells et al (6,310,915 B1) and Florencio et al (6,621,866 B1).

Regarding claim 1, Eyuboglu et al discloses a video transcoding apparatus (Fig. 6, 402), comprising:

- a video decoder (602) for decoding a compressed video bit stream so as to reconstruct a pixel value of an original scene;

- a frame memory (614) for storing the macro block;

- a transcoding parameter control unit (616 via 602) detecting information about a picture from a previous bit stream VLD by the decoder and setting up an encoding mode (Inter/Intra) for a transcoding in accordance with the detected information (Fig. 6, col. 7, lines 6-20);

- a video encoder (608) for encoding data stored in the frame memory (614) by macroblock unit in accordance with the encoding mode outputted from the transcoding parameter control unit;

Eyuboglu et al does not particularly disclose a video preprocessing unit having a predetermined matrix structure and down-sampling a macroblock decoded by the video decoder by transforming the macroblock into a corresponding picture structure to the compressed video bit stream, and

- a bit rate control unit controlling quantization of the video encoder by calculating a bit amount encoded substantially by every picture among a bit stream to the decoded currently by the video decoder and finding a fullness of a buffer in the video encoder using the calculated bit amount.

However, Wells et al teaches a video transcoder comprising a video preprocessing unit (Fig. 2, 20) having a predetermined matrix structure and down-

sampling a macroblock decoded by the video decoder (18) by transforming the macroblock into a corresponding picture structure to the compressed video bit stream (col. 11, lines 39-49), and

Florencio et al teaches a video transcoder comprising a bit rate control unit (Fig. 3, elements 32, 34) controlling quantization (Fig. 10, 172) of the video encoder (174) by calculating a bit amount encoded (Fig. 11, 178) substantially by every picture (slice; picture comprises slices) among a bit stream to the decoded currently by the video decoder (32) and finding a fullness of a buffer in the video encoder (34) using the calculated bit amount (col. 4, lines 9-25).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing the transcoder as taught by Eyuboglu et al to incorporate the teachings of the Wells et al and Florencio et al so that the frame memory stores the down sampled macroblock as an efficient way to control the bit rate in an transcoder.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eyuboglu, Wells et al, and Florencio et al as applied to claim 1 above, and further in view of Wine et al (5,253,041).

Regarding claim 2, the combination of Eyuboglu , Wells et al, and Florencio et al does not particularly disclose the preprocessing unit carrying out a down sampling through a field based processing if the data decoded in the video decoder is an interlaced sequence and the macro block having a frame picture.

However, Wine et al teaches a video compressor comprising a video preprocessing unit carrying out a down sampling through a field based processing based on the interlaced sequence and the macro block having a frame picture.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing the transcoder as taught by Eyuboglu et al to incorporate the teaching of Wine et al so as to eliminate some of the side effects such as color distortions around moving images.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eyuboglu , Wells et al, and Florencio et al as applied to claim 1 above, and further in view of Golin (6,058,143).

Regarding claim 7, the combination of Eyuboglu , Wells et al, and Florencio et al does not particularly disclose transcoding parameter control unit establishing a motion vector and a motion mode of the macroblock down-sampled by the preprocessing unit using motion information of a previous bit stream variable length decoded by the video decoder.

However, Golin teaches a transcoding parameter control unit (Fig. 2, 205) establishing a motion vector and a motion mode of a macroblock using motion information of a previous bit stream decoded by the video decoder.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing the transcoder as taught by Eyuboglu et al to incorporate the teaching of Golin so that the transcoding parameter control unit establishes the motion vector and the motion mode of the macroblock down-sampled by the preprocessing unit using motion information of the previous bit stream variable length decoded by the video decoder as an efficient way to determine a transcoding parameter.

6. Claims 18-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eyuboglu , Wells et al, and Florencio et al as applied to claim 1 above, and further in view of Applicant's admitted prior art.

Regarding claim 18, Eyuboglu et al discloses a video bit stream VLC in the video encoder (Fig. 6, 608).

Florencio et al teaches the bit rate control unit comprising picture bit counting unit (Fig. 11, 178) calculating a bit amount encoded substantially for each picture (slice; picture comprises slices) in a video bit stream inputted to the video decoder and to be encoded currently, and

a buffer in the video encoder (34) finding a target bit number (col. 4, lines 9-25).

Art Unit: 2613

for a picture to be encoded using the bit amount calculated by the picture bit counting unit and a video bit stream in the video encoder, and then calculating the fullness of the buffer in the video encoder (34) using the found target bit number (col. 4, lines 9-25).

the combination of Eyuboglu, Wells et al, and Florencio et al does not particularly disclose a reference quantizing parameter calculating unit calculating a reference quantizing parameter in accordance with buffer fullness outputted from the buffers;

an activity calculating unit producing an activity if a video outputted from the video decoder; and

quantizing parameter generating unit generating a quantizing parameter to be used for a substantial quantization in accordance with the calculated reference, quantizing parameter and the calculated activity so as to control a quantization of the video encoder.

However, Applicant's admitted prior art teaches a reference quantizing parameter calculating unit (Fig. 1, 51) calculating a reference quantizing parameter in accordance with buffer fullness outputted from the buffer (40);

an activity calculating unit (52) producing an activity if a video outputted from the video decoder (10); and

quantizing parameter generating unit (53) generating a quantizing parameter to be used for a substantial quantization in accordance with the calculated reference, quantizing parameter and the calculated activity so as to control a quantization (Q) of the video encoder.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing the transcoder as taught by Eyuboglu et al to incorporate the teaching of the Applicant's admitted prior art so that the reference quantizing parameter calculating unit calculates a reference quantizing parameter in accordance with buffer fullness outputted from the buffer, an activity calculating unit produces an activity of a video outputted from the video decoder, and quantizing parameter generating unit generates a quantizing parameter to be used for a substantial quantization in accordance with the calculated reference, quantizing parameter and the calculated activity so as to control a

quantization (Q) of the video encoder as an efficient way to determine a transcoding parameter.

Regarding claim 19, Eyuboglu et al discloses a picture_start_code (col. 10, lines 32-33) in the video bitstream.

Florencio et al teaches the bit rate control unit comprising picture bit counting unit (Fig. 11, 178).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing the transcoder as taught by Eyuboglu et al to incorporate the teaching of the Florencio et al so that the picture bit counting unit detects a picture_start_code in the video bitstream inputted to the video decoder and counts to output a bit number between the detected picture_start_code and a next picture_start_code, as an efficient way to control the bit rate.

Regarding claim 22, Applicant's admitted prior art teaches the activity calculating unit receiving an output from the frame memory (Fig. 1, 20), finds the activity of the macroblock to be encoded currently, and outputs the normalized activity to the quantizing parameter generating unit (50)(page 9, [0027]).

Furthermore, the Examiner takes official notice that determining a value of an average activity of a macroblock to be encoded/decoded is well known in the art. (see, Horiike et al, (6,044,115)).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing the transcoder as taught by Eyuboglu et al to incorporate the teaching of the Applicant's admitted prior art and the Examiner's official notice so that the initial value of an average value of the activities used for the activity normalization is set up by finding an average activity of a macroblock to be decoded into an original resolution, as an efficient way to control the bit rate.

Allowable Subject Matter

7. Claims 3-6, 8-17, and 20-21 are objected to as being dependent upon a rejected base claim 1, but would be allowable: if any one of the claims 3, 8, and 20 is rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims.

Dependent claims 3-6, 8-17, and 20-21 recite novel features, wherein the art of records fail to anticipate or make obvious.

Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

A) Horiike et al (6,044,115), Method and apparatus for coding and decoding digital image data using image quantization modification.

9. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Shawn S An whose telephone number is 703-305-0099. The Examiner can normally be reached on Flex hours (10).

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

11. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



SSA

Primary Patent Examiner

11/26/04